

# Food

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## Even the kitchen sink

In MIT labs, students cleverly update appliances, utensils, and more

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CAMBRIDGE — There are probably few cooks who would slip on a mitt-style potholder, pull a roasting pan from the oven, and wonder aloud, "What does it mean for me, as an oven mitt, to be at this temperature?" But that's how associate professor Ted Selker thinks as he and his team dream up new ways to make a kitchen more efficient and more fun.

What some simply call "the kitchen" at the Massachusetts Institute of Technology is the Counter Intelligence Lab, part of the Media and Arts Technology Laboratory. It looks more like a mad scientist's workshop than somewhere you would go to cook. But if futuristic ideas that Selker and his team of about 16 undergraduate and graduate students are developing catch on in the outside world, someday your



GLOBE STAFF PHOTOS/BILL GREENE

Kitchen gadgets from MIT's Counter Intelligence Lab.

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# MIT students get truly creative in the kitchen

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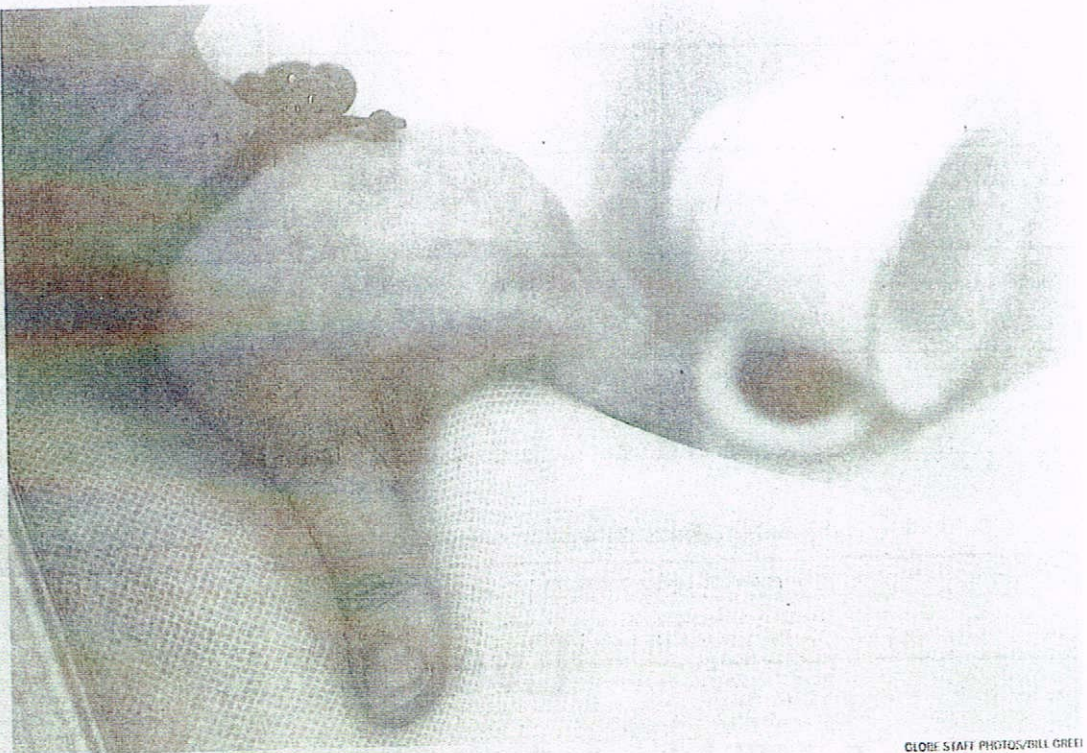
kitchen could look like this, too. Except yours probably won't have dangling wires or the work-in-progress, prototypical feel of this place. But it may have an oven mitt that's also a trivet, which yells "hot" when it comes in contact with something that is too hot to touch. Named Talking Trivet, it suggests "needs rewarming" if something is cool. And if the temperature is just right, it exclaims, "hot and ready to eat."

In the basement of 20 Ames St., the kitchen is a 12-by-12-foot room separated from the hallway by a Plexiglas wall (down the hall is a regular laboratory with a smaller kitchen that the Counter Intelligence group also uses). The Media Lab opened in 1985, the kitchen in 1998, originally run by associate professor Michael Hawley, who is still at the Media Lab. Concord-based food historian and author Barbara Wheaton was a consultant to the kitchen until 2003. Selker began running both kitchens several years ago. This is where he goes to experiment, he says, because "most technologies come into human life through the kitchen," citing ordinary examples such as electricity, running water, cooling systems, lighting, and the grandmother of them all, fire. Selker's first gadget was the Chameleon Cup. Pour hot water into it, and the word "hot" appears; fill it with ice water and the cup turns blue — all thanks to thermochromic (temperature-sensitive, color-changing) ink and liquid crystals harvested from Duracell batteries. Simple — and it still works with the original crystals.

Selker calls his three primary goals for his projects "the three e's": education, efficiency (with a focus on environment), and, of course, entertainment. The faucet that lights up according to temperature will also tell you in a stern voice if it thinks you are using too much water.

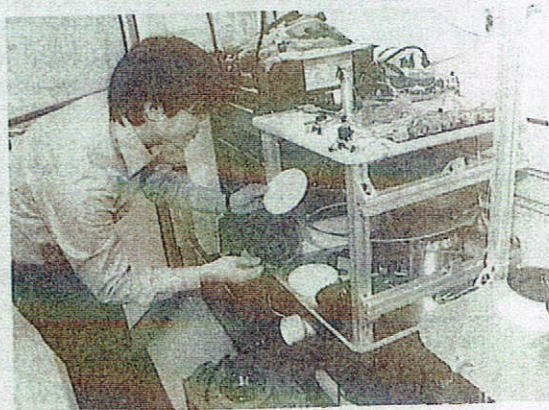
Other gizmos here are geared toward creating a safer environment. There are filters attached to water faucets that detect temperature and then light up (red for hot and blue for cold) to signal a change; projectors that shine a large red warning spot on a hot burner; and a sink that stretches. The sink, fashioned from a white matrix of silicone rubber and fabric mesh, is an invention of graduate student Leonardo Bonanui. Made to adjust its height according to the task at hand, the sink can withstand temperatures higher than you'll ever need in a kitchen (700 degrees Fahrenheit; water boils at 212 degrees). A cool element to the sink, from an aesthetic and a safety standpoint, is that if you toss a wine glass into it from across the room, as Selker likes to do, the sink will catch it gently. No damage done and no more chipped dishes due to soapy slippups.

There are whimsical innovations as well. Have you ever been cooking from a book and won-



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Among MIT's innovations for the kitchen are a silicone rubber and fabric mesh sink that can prevent dish and glassware breakage (above). Below, Jackie Lee works on a machine that takes the concept of recycling dishes to new heights.



dered where to put the volume so it won't get splattered? In the kitchen here, a multimedia program called CounterACTIVE projects recipes and photographs directly onto the counter. When used with Minerva, which identifies foods by camera, those recipes will be planned around ingredi-

ents already on the countertop. The program guides the cook through the kitchen with light-up drawer handles to indicate the whereabouts of necessary utensils.

And what kitchen has enough cabinets? A prototype machine in the MIT kitchen makes acrylic dishes, then reverses the process af-

ter you've used them. It takes the concept of recycling to new heights.

Even the spoons are smart, or at least the "Smart Spoon" is. With its colorful wires in a transparent

casing, the spoon detects pH levels, conductivity, temperature, and other characteristics. Ultimately, it can tell you there is not enough baking soda in your cake batter because the pH level will be off. As Selker says, "Now everyone can be a pastry chef."

Conservation-minded approaches to existing appliances are everywhere here. One is related to keeping food fresh. At first glance, the refrigerator looks like any standard, freezer-top model, though the front is covered in plain white paper. Turns out, that paper is used as a projection screen on which an up-to-date image of the inside can be shown, thanks to the small video camera mounted inside the door, next to where the butter goes. Now you can compose a shopping list or decide what to have for dinner without opening the fridge, thus saving electricity. The program even saves outdated views and potentially shows you, says Selker, "Who ate the cookies?"

Or, who left the empty milk carton in there?

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TED SELKER,  
MIT professor